

## AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

### LISTING OF CLAIMS

1. **(Currently Amended)** A system for conveying an arbitrary mixture of high and low latency traffic streams across a common switch fabric, the system comprising:  
  
at least two diverse paths mapped through the switch fabric from a common input interface to a common output interface, each path being optimized to satisfy respective different latency requirements; ~~and~~  
  
a latency classifier adapted to route each traffic stream to a selected path optimized to satisfy latency requirements most closely matching a respective latency requirement of the traffic stream;  
  
at least two prioritization classifiers, each prioritization classifier is associated with one of the at least two diverse paths, each prioritization classifier adapted to control a priority of the traffic stream being conveyed through the respective path; and  
  
wherein the traffic streams within each of the at least two diverse paths are processed independently.
2. **(Cancelled)**
3. **(Currently Amended)** A system as claimed in claim 12, wherein each path is mapped through respective different physical infrastructure of the switch fabric.
4. **(Currently Amended)** A system as claimed in claim 12, wherein two or more paths are mapped through a common physical infrastructure capable of supporting the path optimized to satisfy the most demanding latency requirements.
5. **(Original)** A system as claimed in claim 1, wherein the latency classifier is adapted to selectively couple each one of a plurality of upstream channels of the network to a selected one of the paths, such that a respective traffic stream of a

communications session mapped through one of the upstream channels is automatically routed to the selected path.

6. **(Original)** A system as claimed in claim 5, wherein the selected path is determined at a time of set-up of the communications session.
7. **(Original)** A system as claimed in claim 5, wherein the latency classifier is further adapted to extract network management and critical mission message content from each traffic stream.
8. **(Original)** A system as claimed in claim 7, wherein the latency classifier is further adapted to route the extracted network management and critical mission message content to a different path from that of each traffic stream
9. **(Original)** A system as claimed in claim 1, wherein each path comprises a respective input queue adapted to buffer data of each traffic stream being conveyed through the path.
10. **(Cancelled)**
11. **(Currently Amended)** A system as claimed in claim ~~14~~0, wherein the input queue comprises:  
  
at least two parallel buffers, each buffer being adapted to store data of at least one traffic stream being conveyed through the path; and  
  
a scheduler for controlling transmission of data from each buffer through the path.
12. **(Original)** A system as claimed in claim 11, wherein the traffic streams being conveyed through the path comprise network management and critical mission messages, and the prioritization classifier is adapted to route the network management and critical mission messages to a selected one of the parallel buffers.
13. **(Original)** A system as claimed in claim 11, wherein the prioritization classifier is adapted to route each traffic stream to a selected one of the buffers based on a content of a predetermined field of the respective overhead of each traffic stream.

14. **(Original)** A system as claimed in claim 13, wherein the predetermined field comprises a respective K-byte field of each Synchronous Optical Network (SONET) traffic stream being conveyed through the path.
15. **(Original)** A system as claimed in claim 13, wherein the predetermined field comprises a respective Differentiated Services Code Point (DSCP) field of each Internet Protocol (IP) traffic stream being conveyed through the path.
16. **(Original)** A system as claimed in claim 1, further comprising a fairness classifier disposed at an egress of each path, each fairness classifier being adapted to separate responsive and non-responsive traffic streams received through the respective path.
17. **(Original)** A system as claimed in claim 16, wherein the fairness classifier is adapted to route each of the responsive and non-responsive traffic streams to a respective buffer.
18. **(Currently Amended)** A method of conveying an arbitrary mixture of high and low latency traffic streams across a common switch fabric, the method comprising a step of:  
  
~~routing mapping each traffic stream to a selected one of~~ at least two diverse paths  
~~mapped~~ through the switch fabric from a common input interface to a common output interface, each path being optimized to satisfy respective different latency requirements;  
  
routing each traffic stream to a selected one of the at least two diverse paths, the selected path being optimized to satisfy latency requirements most closely matching a respective latency requirement of the traffic stream; and  
  
processing each traffic stream independently by individually controlling a priority of each traffic stream being conveyed through the respective path.
19. **(Cancelled)**
20. **(Original)** A method as claimed in claim 18, further comprising a step of buffering each traffic stream being conveyed through the path within a respective input queue of the path.

21. **(Original)** A method as claimed in claim 18, further comprising a step of selectively coupling each one of a plurality of upstream channels to a selected one of the paths, such that a respective traffic stream of a communications session mapped through one of the upstream channels is automatically routed to the selected path.
22. **(Original)** A method as claimed in claim 21, wherein the selected path is determined at a time of set-up of the communications session.
23. **(Original)** A method as claimed in claim 21, further comprising steps of:  
extracting network management and critical mission message content from each traffic stream; and  
routing the extracted message content to a different path from that of each traffic stream.
24. **(Cancelled)**
25. **(Currently Amended)** A method as claimed in claim ~~18~~24, wherein the step of controlling the priority of each traffic stream further comprises the steps of:  
routing each traffic stream to a selected one of at least two parallel buffers, each buffer being adapted to store data of at least one traffic stream being conveyed through the path, the selected buffer being selected based on a content of a predetermined field of the respective overhead of each traffic stream; and  
controlling transmission of data from each buffer through the path.
26. **(Original)** A method as claimed in claim 25, wherein the predetermined field comprises a respective K-byte field of each Synchronous Optical Network (SONET) traffic stream being conveyed through the path
27. **(Original)** A method as claimed in claim 25, wherein the predetermined field comprises a respective Differentiated Services Code Point (DSCP) field of each Internet Protocol (IP) traffic stream being conveyed through the path.
28. **(Original)** A method as claimed in claim 18, further comprising a step of separating responsive and non-responsive traffic streams at a respective egress end of each path.